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UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

Agenda Item: D.1

United States of America

CREATING A PRACTICAL INDUSTRIAL DEVELOPMENT PROGRAM

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Papers have been contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas as working papers for that Conference. They are published as presented by the contributors, and the contents and the views expressed are those of the contributors. (See notes overleaf.)

NOTES

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CREATING A PRACTICAL INDUSTRIAL DEVELOPMENT PROGRAM

by

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1. If reasonably favorable economic and political conditions exist, some industrial growth will take place in a developing country without organized stimulus. Experience has shown that a sound and aggressive campaign for industrial development will bring about much more industrial growth. An industrial development effort can be organized like a war effort, to mobilize resources, stir the imagination and spirit of the people, and advance according to carefully planned strategy. While the techniques of forcing the pace are still in the early stages of evolution, enough has been learned to enable countries seeking industry to profit from the experiences of others.

CONDITIONS FOR AN INDUSTRIAL DEVELOPMENT PROGRAM

2. The creation of a practical industrial development program should start with an understanding of the prerequisites for industrial growth, and by defining the functions which make up an organized effort to force the pace of industrial growth. Only after this foundation is laid is it time to set up institutions and get the program under way. This is not to suggest that everything in the environment must be just right for industry before a start can be made. If this were the situation, special efforts to speed up industrial development probably would not be needed. However, unless some minimum conditions by way of industrial environment are in order or at least in the process of being put in order, even a well-organized industrial program will have little hope of producing worthwhile results.

FUNCTIONS AND METHODS OF INDUSTRIAL DEVELOPMENT

The Industrial Development Functions

3. A program to speed up the industrial development of a country consists of several different but related functions. A country may have development agencies performing one or more of these functions, but the program as a whole may not be successful because some of the important tasks are not being undertaken. There are eight core functions which should be carried on in any country which is setting out to force the pace of industrial development:

a. Improving the investment climate
b. Identifying industrial opportunities
c. Evaluating the feasibility projects
d. Attracting investment
e. Assisting investors
f. Financing projects
g. Improving industrial productivity
h. Performing applied industrial research

4. The creation of a practical industrial development program means getting work on these functions started. There are, of course, other related functions such as technical education, economic planning, and building the infrastructure, but they will not be discussed here. The last three items, Financing projects, Improving productivity, and Applied research, will also be omitted because they are being covered in other papers, and they generally should be made the responsibility of three separate and specialized institutions: an Industrial Development Bank, a Productivity Center, and an Applied Research Institute. The five basic functions listed first fit together well as the work of a single institution which we shall call an Industrial Development Center (IDC) and which will be the main agency to organize and push the industrial development drive. Its functions will constitute the industrial development program.

Improving the Industrial Climate

5. The rate of industrial growth in any country is greatly influenced by what is often called the "industrial investment climate", a term encompassing all environmental factors affecting the ability of industry to operate successfully. These include:

a. The attitudes and policies of government toward private business, foreign capital and personnel, and industrial problems generally

b. Taxation, including rates, exemptions and procedures

c. Import and tariff policies, such as protection for new industries, import duty relief on capital goods and materials

d. Foreign exchange controls affecting imports and repatriation of capital and earnings

e. Immigration rules affecting the inflow of skilled personnel

f. Financing, its availability and cost

g. Labor, its availability, skills and costs, laws affecting employment of labor and the position and attitude of labor itself

h. The infrastructure of power, fuel, transport, water and communication facilities, and their pricing

i. The availability of suitable plant sites and their cost

j. The availability of services needed by industry

6. Systematic efforts to better these elements are known as investment climate improvement work, a vital part of an industrial development program. If well done, this work can reduce the risks of new industries, thus increasing the numbers started and enhancing considerably their chances of success and their contribution to the economy. It should be noted that every climate factor listed is subject to great influence by laws, regulations, government budgets, or the attitude of people, and all can be changed if the need for changes is accepted.

7. How is industrial climate improvement work done? First, the problems encountered by those seeking to establish or operate industries must be identified clearly. This can be done by investigating how and why projects have been delayed or killed or hampered by unsatisfactory climate factors. Documented case studies are needed.

The remedial action required in regard to each major problem should be developed in detail. The strategy for getting action on each problem must be prepared thoroughly to mobilize support for new policies or laws. Item by item, the IDC should attempt to get the industrial climate improved by every method of persuasion and pressure it can muster. The work of improving the climate is a continuous task requiring follow-up on old problems and attention to new difficulties as they arise.

Identifying Industrial Opportunities

8. It is a well-recognized fact that one of the greatest barriers to industrial development is the lack of industrial entrepreneurs - men who can see a potential industrial opportunity, who can measure its soundness, and who can put together a project in a way to attract financing, and who can do all that is necessary to get a new industry into operation. In a highly developed society, private businessmen are continually looking for new industrial opportunities, and rarely is a really good possibility neglected for long. In a less developed country good industrial opportunities may go unnoticed indefinitely unless people with sufficient knowledge of business and specific industries recognize the possible project and do something about making it into a business. To make up for the shortage of entrepreneurs is one of the prime functions of the IDC. It must do at least part of the job of discovering industrial opportunities so that, if the projects turn out to be feasible, necessary financing and management can be attracted.

9. How can the IDC discover industrial opportunities? It can proceed in a systematic, scientific way to examine areas of possible opportunity. This may be done by making studies of broad sectors of industry such as textiles, chemicals, wood products, and food processing. The industry studies should be made by or with the help of specialists intimately familiar with the technology and economics of each industry being examined. Through a study of raw materials, labor skills, markets, comparative production costs, and inter-relationships in the industry, capable industry employers can identify the missing links and the logical next steps in development.

10. Another useful technique is to examine in a preliminary way the feasibility of producing any product which is being imported in significant quantities, and of upgrading any major product being exported in unprocessed form. Additional ideas to test may be obtained by listing industrial operations being carried on in other developing countries. Ideas may also be stimulated by using a standard industrial classification as a guide and by analyzing interindustry relationships. The product of screening is a preliminary list of possible opportunities which seem sufficiently promising to warrant more thorough feasibility study. The screening process should go through several stages - a rough listing of ideas which may total a hundred or more, a series of refinements in which the list is narrowed down by critical examination to perhaps one or two dozen possibilities which seem to justify high priority for detailed study. Through this process new possibilities are continually added, and some are advanced to the feasibility study stage, while others are dropped or relegated to low priority until more is learned of the probable technical or economic merits.

Measuring the Feasibility of Industrial Projects

11. The examination of project feasibility, one of the most important functions of an IDC determines the soundness of industrial opportunity ideas which have originated in the IDC, or passes upon the merits of projects which have been prepared by a prospective investor or machinery seller. In either case three different kinds of feasibility need to be evaluated.

12. The first is technical feasibility. The proposed project must have the right selection of machinery and processes so it can make what it is supposed to make, and produce it competitively. It must have access to suitable materials, power, fuel, water, transport, and other requisites on a reliable basis and at acceptable prices. It must be able to obtain the labor it needs, either skilled or trainable. The right location which maximizes the project's advantages must be found. Making such studies usually requires the assistance of highly specialized engineers who are knowledgeable about the industry, its technology, and its technical requirements. If the project design has not been developed, the IDC may have to determine the appropriate size, the process to be used, the machinery and buildings needed, and the location.

13. The second kind of feasibility that must be evaluated is commercial viability - the prospective soundness of the project as an investment, either of private or public funds. This analysis requires the application of normal accounting techniques to the technical requirements and local cost data. For the proposed volume of production the amount of needed material, supplies, labor, power and fuel is computed to arrive at direct manufacturing costs. When depreciation, management and selling and other overhead expenses are included, the annual operating costs can be derived and compared to projected revenues obtained by multiplying the expected volume by the estimated sales price. These calculations will show the probable profit before taxes of the proposed project and, when the amount of investment needed is taken into account, the return on total investment. This is the commercial profitability which is the measure of the probable value of the project to its owners.

14. The third kind of feasibility, and the only one which justifies public subsidy of one kind or another, is the prospective value of the project to the national economy, the gain which it should produce in the national income. This kind of feasibility is often not thought of, much less measured, thanks to the erroneous but common idea that any industry which can be profitable must be good for the country. Only when the IDC has measured the national economic profitability of a project can it advise soundly what subsidy, if any, is needed to make the project investible, and what national value the project will have to justify the subsidy.

15. Measuring the national economic profitability requires that the cost of production in the project be recalculated on the basis of the real cost to the economy of each item. This means eliminating taxes, pricing foreign exchange realistically, and calculating labor and materials at their best alternative value to the economy (if any). The value of the product to the economy is what the goods could be purchased for on the world market and brought to the country, before duty is levied. This is the "make or buy" concept, for a country always has the choice - import the product, or attempt to manufacture it. If the figures show the real economic costs of making the product are lower than the cost of importing it, the project has positive value to the economy. If not, the IDC should attempt to calculate whether unmeasurable benefits, such as training and influence on further industrialization, are enough to justify the amount of subsidy needed to make the project commercially profitable.

Attracting Investment

16. The successful discovery of an industrial opportunity and the detailed examination of its feasibility will contribute nothing to the development of the country unless capital and management are attracted to the project and unless they set it up as an operating industry. Attracting investment is the marketing phase of

industrial development, and perhaps the most important part of the work of the IDC. In at least one of the most successful industrial development programs in the world, Puerto Rico's investment promotion constituted more than half of the total effort.

17. To most countries seeking industrial investment the promotion of such investments has consisted of little more than publicity in capital exporting countries about the investment climate and the general nature of industrial growth possibilities in the developing country concerned. Such efforts are basic and desirable and can create an image that the country is progressive and welcomes foreign capital and industrial knowledge, but a serious investment attraction program must involve much more than this "shotgun" approach aimed at investors in general. What is needed is a "rifle" approach in which specific investors are identified as being likely prospects for a specific industrial project which has been prepared sufficiently to be ready to attract investor interest. Using this technique, the IDC should develop projects to the point where their value to the economy is established and to the point where possible private investors will do the remaining work of investigation and plant design and actually make the investment. The degree to which projects should be carried by an IDC naturally varies considerably. In some cases a preliminary feasibility study is enough to establish the value of the economy of the project and attract a potential investor to make his own detailed feasibility study. In other instances the IDC must develop the project through the stages of detailed feasibility study, site selection, plant design, and then publish a detailed technical-economic prospectus which a potential investor merely needs to review to determine whether to invest.

18. When the IDC has made a thorough feasibility study prior to any potential investor's expressing active interest in the project, the strategy of promotion needs to be carefully planned. Investors can be placed in two broad groups, manufacturers and financial institutions. The first have a reason to be interested in a project because of their experience in manufacturing and marketing the product. These are the investors of highest value, for their contribution of technical and management experience, marketing connections, and possibly accepted brand names, patents, and licenses, may be much more valuable to the country than the mere money they invest. Financial institutions such as banks or generalized investment companies with no specialized industry knowledge or connections are often highly desirable in completing the financing for a project, but rarely will they sponsor the project in the first instance and supply the vital elements of management and market connections.

19. Identifying the potential primary investors is a major part of investment promotion work. It is readily possible to identify the major companies in the world which own or participate in the operation of plants in the same industry in foreign countries and those producing the product in their own countries, but not operating elsewhere. Companies producing the product abroad for export to the country seeking the investment should be identified as very important targets because of their natural desire to protect the markets they have developed.

20. The other kind of investors, who do not operate manufacturing plants directly but who participate in the financing, usually have no strong preference for one kind of manufacturing compared to another. Generally they do not want to become involved in the management of industries, preferring to play the role of investment bankers while satisfying themselves that the projects are feasible and that management is in the hands of others who are technically and commercially competent. This type of financial institution makes an ideal partner in a project, supplying either loans or share capital or both. Some investment companies of this kind are branches of commercial banks, some are industrial investment companies which are offshoots of wealthy individuals or corporations, others are international financing institutions started with capital from governments.

21 How should an IDC make contact with potential investors and interest them in considering investments? Some will "walk in the door" and express interest in hearing about investment opportunities; others will initiate contact by correspondence. With those who take the initiative the job of the IDC is simple - maintain the contact, and develop it. To generate new prospects requires IDC initiative. Partly it can be done by mail. When a feasibility study is prepared it can be sent to all firms which have been identified as potentially interested. Other promotional material such as news of industrial development, lists of possible new industries and background material on investment climate, can be sent to large mailing lists of firms known to be concerned with international investment. The most productive type of prospect development, however, is direct contact in which a representative of the IDC calls on top officials of companies which are potential investors, and places before them the project prospectus and offers to supply any additional information desired. Any country with a serious investment attraction program needs to have energetic and personable promotion officers resident in Europe and North America continually calling on investors. In this work, and in the identification of the prospective investors, developing countries often benefit from assistance of industrial consultants and public relations counsels.

22. Developing contact with the financial institutions is another part of the work of investment promotion officers resident in the capital exporting countries. As there is a limited number of these investment institutions, the IDC should know them well, and continually refer projects to them. They are always looking for good, well-prepared projects. They may also be able to suggest other companies which might participate in the financing or management of projects.

Assisting Prospective Investors

23. Any country with industrial opportunities, a good investment climate, and an active industrial development and investment attraction program will soon have a steady flow of potential visitors coming in person to see for themselves. Others will be writing with questions relating to projects. An important part of the work of the IDC is to serve these potential investors in a variety of ways. Their questions must be answered promptly and fully. This may involve supplying an item of readily available information or it may involve extensive investigation and analysis which may even constitute a complete private feasibility study. Such help may include market research, obtaining local cost data, finding legal or architectural help or investigating alternative sites. Performing this type of consulting research work free for one potential investor on an exclusive and private basis should not be regarded as inappropriate. A prospective investor who has taken the initiative to seek help in preparing or evaluating his project idea is already half committed and is much more likely to end up making the investment than prospects who are approached "cold" by investment promotion personnel. If the inquirer for whom special research has been done fails, within a reasonable time, to take action on the investment project, the IDC should retain the right to take the material to other investors who might be interested.

24. A different kind of service to potential investors consists of helping them break through the obstacles standing between them and their proposed investments. They may arrive in the country as strangers without contacts or even the names of the people they should see. It is the work of the IDC to act as guides and advisers to such visitors, making sure they have the opportunity to meet the officials and businessmen who can help them, and ensuring that they get the access to the information they are seeking. They should be shown a selection of successful

enterprises and be introduced to the managers who can give them direct observations on the problems of starting a new industry in the country. The IDC should be prepared to set up a program which will make the best use of the visiting investor's time. When the project moves past the stage of feasibility inquiry, the IDC should be ready to help the investor obtain any necessary government approvals, guarantees, incentive benefits, subsidies, or concessions, which he is entitled to, and which the IDC, as a result of its analysis, considers it in the public interest for the new industry to have. Throughout the whole process of project investigation, analysis, and finalization, the IDC in effect acts as an adviser and consultant to the prospective investor, and an intermediary between him and the government to whatever extent he wishes to use the service.

25. Once the investor has made a commitment to go ahead with his project the work of the IDC is not ended. It should continue in the closest cooperation with the investor until his factory is in successful operation. He may need help in finding key local staff, in setting up a training program, in getting title to land, in selecting a contractor, in establishing a marketing system, in expediting customs clearance on machinery, and a hundred and one other details. The IDC, being intimately familiar with both government and business in the country, is in the ideal position to help the newcomer solve the problems which stand in the way of success for his new industry.

ORGANIZATION FOR INDUSTRIAL DEVELOPMENT

Institutions to Perform the Industrial Development Functions

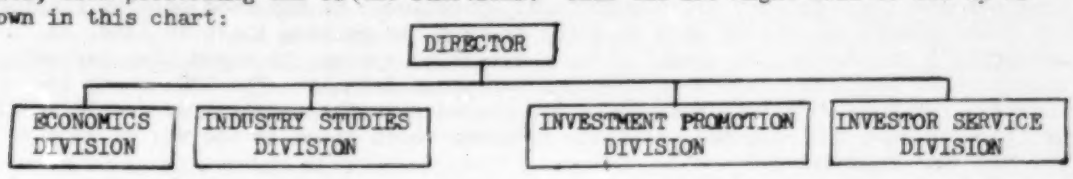
26. The functions which make up the Industrial Development Program will be performed by people working in and through the organized framework of institutions. The five functions discussed in detail may well be assigned to the single institution, the Industrial Development Center.

27. Because the functions of the IDC represent activities of an official nature mainly designed to assist and encourage the development of industries which will be privately owned and managed, the IDC occupies a position somewhere in between the government and the private sector. The IDC, representing as it does official policy toward industry, and using government funds for its work, is basically a government agency. The need for it to occupy middle ground between government and private business argues that it should be somewhat outside of the regular ministerial machinery of government. Such a position should help insulate it from the pressures of politics and help to keep its work on an objective and technical basis. It should also help it to operate more along commercial lines through avoiding some of the restrictions of governmental system. This quasi-official status may be obtained by establishing the IDC as an independent public service corporation with a board of directors representing both government and business. Such a board, if composed of influential and public spirited citizens, should be able to create for the IDC a role of importance in such matters as improving the industrial climate. A joint government-business board should serve as a bridge between the public and the private sector, and help make industrial development the national campaign in the public interest which it should be. The board should concern itself only with the policies to be followed by the IDC, and with the efficiency with which the institution carries out its work. The day-to-day operation of the IDC should be delegated completely to its Director.

28. The Director of the IDC should be a leader of such stature and prominence in the country that he personally can impart to the organization some of the status it needs to be effective. The Director must be a dynamic organizer, capable of attracting highly qualified personnel, and building them into a strong and active organization. He must have the confidence of top government leaders so he can influence the changes in official policy needed to improve the industrial climate. He must have the confidence of investors and industrialists so they will be serious about investment projects brought forward by the IDC. While it is naturally desirable for the Director of the IDC to be a man with technical knowledge of industry, this is not nearly as important as his talent for organizing and promoting. The Director must be well supported by his technical staff, but he must have the capability himself to attract various and often divergent interests to work together to invest in new industries.

The Organization and Staffing of an Industrial Development Center

29. The responsibilities which have been described for the Industrial Development Center could be distributed in various ways within the organization, but the different nature of the various functions suggests that the IDC should be composed of several units, each performing one of the functions. Thus the IDC might well be set up as shown in this chart:



30. The Economics Division should be responsible for work not strictly related to only one specific industrial project. Its areas of work should include:

(a) Industrial planning
(b) Advisory services to government on industrial policy questions
(c) Investment climate improvement work
(d) Preliminary screening for industrial opportunities
(e) Infrastructure studies (transport, power, etc.)
(f) Industrial land availability work
(g) Background studies (labor, incentives)
(h) Development of industrial statistics
(i) Evaluation of industrial progress

31. The Industry Studies Division should be responsible for the development and evaluation of specific projects. Its work should include:

(a) Preliminary evaluation of project ideas
(b) Industrial project feasibility studies (all aspects, including engineering, commercial prospects, economic value to country)
(c) Market research related to projects
(d) Evaluations of alternative locations and sites
(e) Plant design or evaluation, and costing
(f) Financial estimates
(g) Preparation of prospectuses

32. The Investment Promotion Division should be the marketing arm of the IDC with responsibility for finding the prospective investors. Its work should include:

(a) Identification of potential investors for specific projects
(b) Preparation of promotional material, both general, and project
(c) Distribution of promotional material to prospective investors

provinciale aussi bien sur le plan économique que sur le plan intellectuel et culturel;

- l'essor de nombreux centres industriels secondaires dans les petites villes de 10.000 à 100.000 habitants qui disposent déjà d'un équipement industriel au moins embryonnaire et qui, étant encore proches du monde agricole, constituent les lieux où chefs d'entreprises et main d'oeuvre peuvent trouver le maximum de facteurs favorables à leur rencontre. C'est le cas de toutes les villes du pourtour de la presqu'île bretonne : St-Nazaire, Vannes, Lorient, Quimper, Brest, Morlaix, Guingamp, Dinan, St-Mâlo, etc...

- enfin la création d'un artisanat industriel en milieu rural grâce à de petits centres d'activité industrielle susceptibles d'accueillir quelques entreprises comptant chacune peu d'ouvriers et par conséquent de fixer dans la région même la main d'oeuvre disponible d'origine agricole : tel est les cas de la région agricole qu'est l'Argoat.

Une telle politique suppose pour son application une planification économique conçue au niveau de l'Etat appuyée sur des aides financières dosées en fonction des caractéristiques de chacune des régions intéressées.

L'Etat veille donc ainsi à l'établissement de programmes d'action régionale qui définissent les grandes lignes d'un développement rationnel et coordonné des diverses régions de France, dans les limites tracées par le IVème Plan à l'échelle nationale. Les programmes sont complétés par la définition de "tranches opératoires" qui prévoient l'évolution économique de la région par zone et par secteur d'activité, avec un ordre d'urgence des opérations à réaliser.

Sur le plan financier, l'Etat incite les entreprises à inscrire leurs projets dans le cadre ainsi défini en leur offrant certains avantages, tels que :

- des primes spéciales d'équipement, véritables subventions accordées au prorata des emplois créés et des investissements réalisés,

- des prêts à long terme réalisés auprès du Crédit National ou de la Caisse Centrale de Crédit Hôtelier, Industriel et Commercial.

Il peut s'y ajouter des prêts de productivité et d'organisation, des subventions pour adaptation professionnelle et transferts de main d'oeuvre et des exonérations fiscales, sans parler de la construction par la collectivité publique elle-même de centres de formation professionnelle accélérée et de collèges techniques dont l'existence est indispensable au bon démarrage des nouvelles industries.

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Pour leur part, et sur le plan local, les municipalités et les chambres de commerce favorisent l'implantation d'usines en aménageant par avance des zones industrielles qui permettent à la fois de grouper rationnellement les nouveaux établissements sur des terrains bien adaptés, bien situés et pourvus aux moindres frais de tous les équipements généraux et réseaux divers dont ils peuvent avoir besoin, et de donner une plus grande souplesse au marché du travail dans l'agglomération considérée. Les zones industrielles s'imposent dans les centres susceptibles d'attirer une masse relativement importante de main d'oeuvre nouvelle.

(d) Correspondence with potential investors
(e) Direct contact with potential investors

33. The Investor Service Division should have the responsibility to do all things possible to help potential investors make their investigations, arrive at investment commitments, and get their projects started. Its work should include:

(a) Obtaining information requested by investors
(b) Making arrangements for visiting investors
(c) Assisting investors in dealings with the government
(d) Assisting investors in solving problems which delay projects
(e) Providing consulting service to investors in setting up operations

34. The quite different nature of the work of the several divisions suggests that different kinds of people are required to do their work well. The Economics Division requires mainly industrial economists, preferably at least one with legal training. The Industry Studies Division needs engineers and economists with a broad knowledge of industry, and also of finance and economics. The Investment Promotion Division needs salesmen who have a broad understanding of industrial economics and finance. The Investor Service Division requires business administration type personnel with a consultant's talent for identifying and solving business problems.

Une fois décidé l'aménagement d'une zone industrielle, les collectivités locales responsables ont à faire face à une série de problèmes d'ordres très divers :

- détermination de la superficie à équiper dans une première étape de cinq ou six ans (ce qui n'empêche nullement la constitution de réserves foncières à utiliser ultérieurement). La superficie à équiper est essentiellement fonction des perspectives de l'emploi, liées elles-mêmes à l'activité économique dans la région, aux perspectives démographiques, enfin aux possibilités de formation professionnelle.

Elle est calculée à partir du nombre d'emplois industriels à créer tel qu'on peut le déduire des estimations du IVème Plan, mais, comme les industries qui s'implanteront sur la zone ne sont pas connues à l'avance dans la plupart des cas, on doit se contenter de moyennes calculées par référence à des expériences antérieures; on admet généralement une moyenne de 60 à 70 postes de travail par hectare de terrain nu (abstraction faite de certaines industries lourdes pour lesquelles la densité est beaucoup moindre).

Lorsqu'il s'agit d'agglomérations importantes, il apparaît souvent préférable de scinder la superficie à équiper en plusieurs zones à vocation nettement différenciée : les unes près de la voie d'eau sont réservées aux industries lourdes, les autres, raccordables au fer, aux industries "moyennes", les dernières enfin, réservées aux industries "légères" ou aux laboratoires, n'ont aucune liaison avec la voie d'eau ou la voie ferrée. Cette formule a notamment été adoptée par Bordeaux et par Nantes.

- études techniques préalables à la réalisation. Ces études qui concernent les divers réseaux nécessaires à l'équipement général des zones (desserte ferroviaire, voirie, assainissement, eau, électricité, gaz, télécommunications, etc...) permettent d'aboutir à un bilan prévisionnel de l'opération.

- réalisation concrète : acquisition des terrains, lancement des travaux, surveillance de leur exécution, enfin revente par lots de la zone équipée.

Les collectivités locales sont, dans de nombreux cas, insuffisamment outillées pour mener à bien de telles opérations. Elles suscitent alors la création de Sociétés d'Economie Mixte d'Equipement qu'elles chargent d'étudier et de réaliser sous leur contrôle et celui de l'Etat, telle ou telle opération. Ces Sociétés d'Equipement peuvent alors agir avec beaucoup plus de souplesse que ne le font les collectivités locales, tenues à des procédures administratives mal adaptées à la nature commerciale de ces opérations, et leur efficacité n'est maintenant plus à démontrer.

Les Sociétés d'Equipement peuvent, en outre, bénéficier du concours de la Société Centrale pour l'Equipement du Territoire qui met à leur disposition un pool de services administratifs, financiers, comptables, juridiques, fiscaux et techniques déjà expérimentés en la matière. Grâce à cette collaboration, plus de 2.000 hectares de terrains industriels, répartis entre une soixantaine d'agglomérations, avaient été acquis par les Sociétés d'Economie Mixte et se trouvaient en cours d'équipement ou équipés au printemps de 1962. Sur ce total, environ 700 hectares équipés avaient déjà été revendus à des industriels. Le nombre d'entreprises implantées dans ces conditions s'élevait à près de 260.

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CREATING A PRACTICAL INDUSTRIAL DEVELOPMENT PROGRAM

by
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1. A country enjoying a reasonable degree of good order and good government can accelerate industrial development if it takes the initiative and organizes an aggressive program. Certain conditions must exist, of course: a fair degree of economic stability; an environment that provides freedom for the operations of initiative; sufficient development of the infrastructure to support industrial growth.

2. An industrial development program needs to rest on three basic concepts: First, that government should play an active role in creating a good environment for industry and in identifying industrial opportunities, developing projects and attracting private capital and management to projects found to be of value to the national economy; second, that industrial development probably will require importing technology from industrialized countries and, therefore, that thoughts should be given to incentives to stimulate inflow of foreign capital and management; third, that there is a vast range in the value of industrial projects to a country, and that the value of projects should be measured, so far as possible, to determine what subsidy, if any, the country should give as an incentive.

3. Five functions of industrial development should be considered as basic elements of the program. Improving the investment climate means creating the environment conducive to faster industrial growth. Factors which may need attention include taxation, import and tariff policies, foreign exchange regulation, immigration rules, the availability and pricing of land, fuel, power, transport and communications, and the attitude of government and labor toward private business and the import of capital and personnel. After identifying the environmental problems of industry, organized action can be taken to remove barriers that may exist

4. Identifying industrial opportunities is the systematic and imaginative search for possible industrial projects which have not yet been developed. This function, in some societies performed by businessmen, needs official action in a country lacking entrepreneurs. Studies of broad industrial sectors by industry specialists may reveal neglected opportunities. Others may be found by analyzing imports and exports, by observing successful developments elsewhere, and by examining interindustry relationships. Through this screening, potential opportunities which merit study will be found.

5. Measuring the feasibility of projects requires evaluation of three kinds of feasibility. The first is technical feasibility: a project must be designed with appropriate technology, be located in a strategic place, and have access to suitable materials and facilities on a reliable and economic basis. The second is commercial feasibility: a project must be a sound investment regardless of whether private or public funds are to be invested. It must be able to produce at prices for which the product can be sold in the volume necessary, so that the capital will be fruitfully employed. The third is national economic feasibility: a project must have value to the country's economy. Only if analysis shows the industry will benefit the economy can a special subsidy be justified.

6. Attracting investment is the marketing function of the program and possibly the most important. While general publicity is worthwhile, investment promotion needs to relate to specific individual projects and be directed at specific potential investors who have been identified as likely prospects. Investment attraction should be directed primarily to companies with specialized technical and marketing experience for the product to be made, and secondarily to financial institutions.

7. Assisting prospective investors is the function of helping investors gather information on which to base their decision, aiding them in becoming acquainted with the country, helping them to realize the incentives and secure official support, and serving as their advisers and consultants in meeting the problems of investment arrangements and starting their industrial enterprises.

8. These functions make up the industrial development program. They need to be performed by people working in a well-organized institution. These functions fit together well in one organization, which may be called an Industrial Development Center (IDC). Other important functions such as project financing, productivity improvement, and applied research should be performed by other, more specialized institutions. The IDC is basically an official agency, but it should occupy a position midway between government and the private sector. It may be controlled by a board of directors representing both government and business. The IDC should be led by a director of prominence and great organizing and promoting ability, and he should have full authority to manage it.

9. The IDC may well be organized into four divisions. The Economics Division should undertake duties not related to any one project, such as investment climate improvement work, but to planning infrastructure studies, and preliminary screening for industrial opportunities. The Industries Studies Division should do project work including feasibility studies, plant design and costing, and financial estimates. The Investment Promotion Division should identify potential investors for specific projects and attempt to attract their interest. The Investor Service Division should assist potential investors in all possible ways up to the time when their projects are operating successfully. The effective operation of the IDC requires staffing by industrially experienced economists and engineers in the analytical divisions, by energetic salesmen in the Promotion Division, and by capable business consultants in the Investor Service Division.

S - 1765.E - Nov.1962 - 1,600

NOTES

1. Les mémoires choisis pour être présentés en séance générale pourront être obtenus à la Conférence dans les langues officielles suivantes des Nations Unies: anglais, espagnol, français et russe.

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CONTRIBUTION A L'ETUDE DES METHODES DE DEVELOPPEMENT DES REGIONS PEU INDUSTRIALISEES

par Marcel LEPAGE
Chef du Service de l'Equipement Industriel
à la SOCIETE CENTRALE POUR L'EQUIPEMENT DU TERRITOIRE

Les planificateurs qui se préoccupent de favoriser le développement économique, et plus spécialement industriel, des pays neufs concluent la plupart du temps à la nécessité de créer non seulement des industries lourdes de base pour affermir leur indépendance mais aussi et surtout des industries légères de transformation pour utiliser la main d'oeuvre agricole surabondante et assurer un équilibre plus satisfaisant entre les diverses activités économiques.

Dans cette perspective, le problème de ces pays neufs présente une certaine analogie avec celui que pose, aux pays de vieille économie, l'industrialisation des provinces à vocation traditionnelle agricole dont il est indispensable de développer l'activité industrielle pour leur donner un niveau de vie comparable à celui des régions qui se sont plus rapidement industrialisées.

Les méthodes employées à cet effet sont donc d'un grand intérêt pour la coopération internationale et nous allons décrire ci-dessous celles en vigueur en France pour revivifier des provinces encore peu industrialisées telles que l'Aquitaine ou la Bretagne que nous prendrons comme exemple concret.

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C'est évidemment dans un cadre national que doit se concevoir l'action régionale, et pour le situer rapidement, nous dirons que c'est à un triple objectif que tendent les pouvoirs publics en ce domaine :

- l'essor de la production industrielle, conçu avec le souci d'assurer à la France une position favorable dans le marché commun, et fixé par le IVème Plan de Développement à un taux de progression annuelle de 5,5 %;

- la recherche du plein emploi, dans la perspective d'un accroissement de la population active d'environ 590.000 personnes entre 1959 et 1965, auquel s'ajoutera une quantité importante de main d'oeuvre libérée par l'agriculture;

- l'aménagement du territoire, c'est-à-dire une répartition géographique rationnelle des moyens de production visant essentiellement à la déconcentration de l'activité de la région parisienne au bénéfice de régions plus défavorisées comme la Bretagne du fait de sa position géographique ou à économie en transformation comme le Nord de la France du fait de la reconversion de l'industrie charbonnière.

Seule une action extrêmement souple peut être engagée pour satisfaire à un objectif aussi complexe, et elle tend à utiliser essentiellement trois formules :

- le développement des grandes agglomérations telles que Rennes ou Nantes pour créer de véritables métropoles régionales capables d'animer la vie

L'action des collectivités publiques ou de leurs concessionnaires peut, en outre, aller dans certains cas exceptionnels, jusqu'à une participation financière ou technique à la construction des usines que les industriels entendent édifier sur les zones où ils s'installent; cette participation est alors considérée comme un prolongement de l'équipement de la zone et s'intègre, à ce titre, à l'arsenal dont dispose la puissance publique pour inciter les entreprises privées à faire coïncider leurs initiatives avec l'intérêt général.

Le mode d'intervention le plus usité par les collectivités publiques est la prise en charge de la construction par la Société d'Economie Mixte concessionnaire. Pour financer l'opération, la Société d'Economie Mixte contracte un emprunt garanti par la collectivité concédante et remboursable en 15 ou 20 ans, auprès du "Groupement des Collectivités pour le Financement des Travaux d'Equipement". L'usine construite est revendue, clés en main, à l'industriel sous forme de vente à paiement différé, les annuités correspondant au remboursement de l'emprunt contracté.

Tel est le cas d'usines construites dans l'Ouest de la France dans les centres industriels dont nous avons parlé ci-dessus, de natures aussi variées qu'une usine de charpente métallique à Dinan, une usine d'horlogerie à Châtellerault, un atelier d'emballages pharmaceutiques à Poitiers ou une fabrique de meubles à Bordeaux.

En matière de construction d'usines, les services techniques de la Société Centrale pour l'Equipement du Territoire se sont de plus efforcés de trouver la solution la plus économique à la fois pour la collectivité et pour l'entreprise; ils ont mis au point des plans d'usines de conception standard, articulées à partir de cellules types et facilement adaptables à des industries très diverses. L'installation de telles usines devrait constituer une solution particulièrement efficace pour l'industrialisation des pays neufs, car elle peut être réalisée aux moindres frais et offre le maximum de souplesse dans le cas de transformations ou d'extensions ultérieures.

La S.C.E.T.-Coopération s'efforce d'ailleurs déjà de développer outre-mer un système de location-vente de petites usines, inspiré de ce principe

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Tels sont les objectifs et les moyens de la politique d'industrialisation des provinces françaises pratiquée depuis 1955. La comparaison des surfaces de planchers industriels dont la construction a été autorisée en province entre 1949 et 1954 d'une part, 1955 et 1960 d'autre part, témoigne de l'impulsion que cette politique a donnée à la construction de bâtiments industriels nouveaux: 5.316.000 mètres carrés autorisés au cours de la première période, 15.228.000 mètres carrés au cours de la seconde période. D'autre part, le nombre des zones industrielles équipées s'est fortement accru depuis quatre ans.

L'expérience ainsi acquise dans les provinces françaises peut donc certainement être utilement mise à profit par les pays en voie de développement industriel auxquels se posent des problèmes semblables.

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UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

SUMMARY

Agenda Item: D.2

France

CONTRIBUTION TO THE STUDY OF METHODS OF DEVELOPING AREAS WITH LITTLE INDUSTRY

By Marcel LEPAGE,
Head of the Industrial Equipment Division,
Société Centrale pour l'Equipment
du Territoire

Papers have been contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas as working papers for that Conference. They are published as presented by the contributors, and the contents and the views expressed are those of the contributors. (See notes overleaf.)

NOTES

1. Papers selected for inclusion in General Sessions will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

2. Papers selected for inclusion in Specialized Sessions will be available at the Conference in only one of the above official languages.

3. Summaries of all papers, as submitted by contributors, will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

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CONTRIBUTION TO THE STUDY OF METHODS OF DEVELOPING AREAS WITH LITTLE INDUSTRY

By
Marcel LEPAGE, Head of the Industrial Equipment Division, SOCIETE CENTRALE POUR L'EQUIPEMENT DU TERRITOIRE

SUMMARY

The problem of the industrialisation of developing countries is analogous in many respects with that set by the industrial development of traditionally agricultural regions in countries which are already industrialised. Thus, in France, the creation of employment in certain western and south-western provinces now has to aim at maintaining a satisfactory demographic and economic balance, and it is interesting to note how these problems are being solved in our country, where industrial development largely commands the harmonious development of the whole economy; it must therefore, fulfil three conditions:

- the expansion of industrial production in accordance with the directives of the Fourth Economic and Social Development Plan, with a view to ensuring a favourable position for France in the Common Market;

- the establishment of full employment, based on the growth of the working population as forecast by the Manpower Committee of the Central Planning Commission;

- the development of the country, aiming at a rational geographical distribution of the means of industrial production and not merely decentralisation from the Paris region; it should, for example, solve the problems raised by the economic development of certain under-privileged regions, or by the conversion of certain declining industries, such as shipbuilding and coal-mining; it should promote optimum utilisation of natural resources; and it should provide foci of industrial employment within each region and, by thus creating secondary centres of attraction and nuclei for rural industries, prevent the depopulation of the hinterland and the excessive concentration of population in the large towns.

These considerations guide the action of the authorities in the Ministry of Construction, the Central Planning Commission and the Ministry of Industry.

Three methods are used simultaneously:
- development of a few large provincial capitals;

- extension of secondary industrial centres, to which the main effort should be directed at present;

- establishment or expansion of an artisan industrial population in rural areas.

In order to carry out this policy successfully, the State has various means of inducing companies to fit their projects into the framework laid down by the Government: these include the establishment of regional action programmes, subdivided into "operational stages", subsidies, loans and tax reliefs for companies setting up in the least-favoured regions. These special concessions are granted on the recommendation of a special committee of the Economic and Social Development Fund, composed of representatives of all the interested Ministries and Departments.

For their part, municipalities and Chambers of Commerce, acting either directly or through mixed Development Companies, (sociétés d'économie mixte d'équipement), promote the development of private industry, by laying out industrial zones in advance on suitable land, provided, at minimum cost, with all the general equipment and utilities which may be needed.

Industrial zones have two further substantial advantages from the standpoint of the public interest; they are systematically co-ordinated with town-planning schemes and they regularise the local labour market by widening the range of jobs.

The establishment of industrial zones poses a series of widely-differing problems:

- determination of the area to be equipped, which depends mainly on employment prospects in the centre and region under consideration;
- siting of the zone in the town and, where appropriate, division of the area to be developed into several zones devoted to different types of activity;
- preliminary technical studies as a basis for a provisional balance-sheet;
- actual development, involving purchase of the land, the starting of work, supervision of works and the sale of the developed zone by lots.

For the execution of these complex tasks, the local authorities often call on the Sociétés d'Economie Mixte, which were specially formed to handle urban development schemes.

Action by the public authorities may also include financial or technical participation in the construction of factories planned by industrialists for the zones in which they propose to establish themselves; in such cases, participation is regarded as a continuation of development of the zone and, therefore, forms part of the policy of incentives referred to earlier.

Begun 10 years ago, this policy has provided some spectacular results, and, over the past 4 years, the number of industrial zones developed in France has been greatly increased to meet the considerable growth of the working population which will be evident from 1965 onwards.

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CONFÉRENCE DES NATIONS UNIES
SUR L'APPLICATION DE LA SCIENCE ET DE LA TECHNIQUE
DANS L'INTÉRÊT DES RÉGIONS PEU DÉVELOPPÉES

Point de l'ordre du jour : D.4

France

LES VIANDES HACHEES CONGELEES, PRESENTATION "ROSBIF", DE FABRICATION INDUSTRIELLE DESTINEES A L'INTENDANCE MILITAIRE FRANCAISE

Par le Service des Laboratoires,
Inspection Technique des Subsistances

Les mémoires rédigés à l'intention de la Conférence des Nations Unies sur l'application de la science et de la technique dans l'intérêt des régions peu développées sont des documents de travail. Ils sont publiés tels qu'ils ont été présentés et les assertions et opinions qu'ils contiennent sont celles de leurs auteurs.

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LES VIANDES HACHEES CONGELEES PRESENTATION "ROSBIF" DE FABRICATION INDUSTRIELLE DESTINEES AU SERVICE DE L'INTENDANCE MILITAIRE FRANCAISE

INSPECTION TECHNIQUE DES SUBSISTANCES

Service des Laboratoires

I. - INTRODUCTION.

L'Armée Française, qui doit se plier aux servitudes de l'entretien d'approvisionnements de sécurité, a, depuis 1945, pratiquement abandonné la fabrication des viandes de bovins congelées en quartiers pour ne réaliser que des viandes désossées congelées en caisses sous la forme de "viandes à griller ou à rôtir" et de "viandes à braiser ou à bouillir", provenant respectivement en presque totalité des quartiers "arrière" et des quartiers "avant" des animaux abattus. Or, depuis plusieurs années déjà, on a constaté chez le consommateur militaire une désaffection de plus en plus nette pour tout ce qui n'est pas grillade ou rôti. C'est ainsi que les viandes "à bouillir" ont souvent fait l'objet de critiques de la part des rationnaires qui leur reprochent une teneur relativement importante en déchets (graisse, aponévroses...), plus particulièrement quand il s'agit de certains morceaux provenant du quartier avant (poitrine, plat de côtes, collier...).

Pour éviter ces critiques et compte-tenu du fait que tout animal de boucherie acheté par l'Armée doit être utilisé dans sa totalité, il a paru intéressant à l'Intendance de procéder d'abord à titre d'essai (1959-1960), à des fabrications limitées ayant pour objet de présenter sous une forme "à griller" ou "à rôtir" les morceaux devant être normalement utilisés en pot-au-feu et jugés à l'utilisation les moins satisfaisants sous la présentation classique. Pour ce faire, les morceaux les plus difficiles à débarrasser, au cours de la fabrication, de leur excès de graisse et de leurs parties tendineuses, sont parés aussi convenablement que possible, puis finement hachés. Le hachis ainsi obtenu est d'abord

pétri sous vide, puis poussé mécaniquement dans un filet sous un emballage plastique cylindrique et étanche de telle sorte qu'il se présente finalement sous la forme d'un "rosbif reconstitué" de 2 kg environ. Les cylindres ainsi obtenus sont immédiatement logés en caisses de 25 kg net, soumis à la congélation rapide, puis transportés et stockés sous régime de froid en attendant leur utilisation.

Ces "rosbifs hachés" peuvent être, sans décongélation préalable, soit rôtis au four après avoir été débarrassés de leur enveloppe plastique, soit étuvés dans l'eau bouillante, "à la nage", dans leur emballage étanche en rilsan, soit grillés sous forme de "steacks" après découpage en tranches du bloc encore congelé.

II. - LE "ROSBIF HACHE" TYPE INTENDANCE.

La viande hachée qui constitue une denrée essentiellement périssable, beaucoup plus fragile que la viande en morceaux, ne pouvait être introduite dans la ration militaire sans que ne soient prises certaines précautions particulières destinées à sauvegarder la santé des consommateurs.

Dans ce but, les Vétérinaires Militaires chargés de l'étude de ce problème, commencèrent tout d'abord par définir les caractéristiques de la "viande hachée" susceptible de convenir aux besoins de la collectivité militaire et par codifier les techniques à mettre en oeuvre pour assurer la réalisation d'un produit de haute qualité hygiénique.

A. - Caractéristiques du produit.

Seule fut jugée susceptible de convenir aux besoins de l'Armée une viande hachée, préparée à partir d'animaux sains et de bonne qualité, avec le minimum de manipulations, pétrie sous vide, poussée mécaniquement sous emballage plastique en pains de 2 kg environ, traitée par congélation rapide dès sa préparation et stockée à une température ne dépassant pas -12°C jusqu'au moment de son utilisation, d'où son nom de : "viande hachée congelée présentation "rosbif".

Il fut d'autre part décidé que toutes ces opérations seraient effectuées sous le contrôle de techniciens détachés par les Services compétents et que la réception des produits finis serait conditionnée par les résultats d'un double examen bactériologique et chimique destiné à contrôler la salubrité et la proportion des principaux constituants (viande et graisse).

Ces conditions de fabrication éliminaient "ipso facto" toute préparation "à la cuisine" ou "par un boucher détaillant" puisqu'elles imposaient la mise au point de chaines de fabrication au sein d'établissements importants, modernes, propres, et correctement équipés, susceptibles de

réaliser, dans d'excellentes conditions d'hygiène et sous contrôle permanent, des tonnages importants de marchandise.

C'est ainsi que plusieurs abattoirs industriels français firent très rapidement l'effort d'aménagement indispensable à la fabrication d'un tel produit selon les directives fournies par les Services techniques de l'Armée, auteurs de cette réalisation.

B. - Mise au point du procédé de fabrication.

La préparation industrielle d'une denrée aussi fragile que la viande hachée pouvait paraître à certains une expérience d'autant plus hasardeuse qu'un essai réalisé par l'Intendance en 1945 n'avait pas abouti à un résultat satisfaisant. Il semblait toutefois logique de penser que cette expérience puisse être menée à bien, compte-tenu du fait que des productions assez voisines étaient réalisées couramment dans certains pays étrangers et, qu'en France, les plus grands abattoirs industriels possédaient une installation rationnelle, un équipement moderne et désiraient acquérir le matériel nécessaire à l'équipement d'une chaine de hachage pétrissage et conditionnement de la viande excluant toute intervention manuelle. Ne restait donc à résoudre qu'un problème d'hygiène et à effectuer une étude des mesures à mettre en oeuvre aux points où interviennent habituellement les souillures d'origine animale ou humaine les plus intenses, c'est-à-dire : l'abattage, la dépouille, l'habillage, le désossage et le parage.

Il fut donc demandé à divers abattoirs industriels et aux équipes de surveillance qui s'y trouvaient à l'occasion du contrôle d'autres productions de procéder à des fabrications purement expérimentales de viande hachée en mettant tout en oeuvre pour qu'elles soient réalisées dans des conditions hygiéniques particulièrement rigoureuses, même au prix d'un ralentissement sensible du rythme des abattages.

Une attention particulière fut alors apportée

- à l'hygiène des locaux;
- à l'hygiène du personnel;
- et à toutes les mesures qui pourraient conduire à la réduction des pollutions lors des opérations de dépouille, d'éviscération et d'habillage.

Chacune de ces fabrications expérimentales fut l'objet de prélèvements nombreux à partir desquels il fut procédé à des examens de laboratoire complets qui permirent de contrôler l'efficacité des mesures adoptées et l'incidence de tel ou tel événement sur la qualité des fabrications.

C'est ainsi que successivement fut mis en évidence le rôle bénéfique : de la désinfection fréquente du hall d'abattage, du changement journalier des vêtements du personnel, du nettoyage des instruments, de la priorité

accordée à ces fabrications délicates, de la saignée effectuée sur l'animal suspendu, de l'ablation des mammelles sans section préalable des trayons, de la dépouille faite de telle sorte que la peau levée n'entre plus en contact avec la "viande", de la ligature des orifices des réservoirs digestifs lors de l'éviscération, de la suppression de toutes manipulations portant sur de la viande de porc lors des fabrications de viande de boeuf hachée, du flambage à la lampe à souder du tour des tables de désossage, du non-emploi dans cette chaîne d'ouvriers enrhumés, grippés, ou porteurs de plaies manuelles.

Il fut également procédé à des expérimentations sur :

- le lavage des carcasses,
- l'influence de l'addition d'assaisonnements divers à la viande,
- le degré de pollution des enveloppes dans lesquelles sont conditionnés les "rosbifs hachés",
- le rôle bénéfique des rayons ultra-violets en certains points de la chaine de fabrication.

Toutes ces expériences mirent en évidence deux faits :

- d'une part, qu'il était possible de réaliser en France au stade industriel une viande hachée congelée de haute qualité hygiénique, le plus souvent très pauvre en germes, et satisfaisant largement aux normes imposées;

- d'autre part, le fait bien connu d'ailleurs et rappelé encore dernièrement lors du 3ème Symposium de l'Association des Vétérinaires Hygiénistes de Denrées Alimentaires (NICE - 1962), à savoir que l'obtention d'une viande de bonne qualité hygiénique, c'est-à-dire "paucimicrobienne" nécessite la mise en oeuvre d'un ensemble de mesures tout au long de la chaine de fabrication et que la défaillance de l'une d'entre elles ne peut être palliée par le renforcement d'une autre.

Dès que ces faits furent établis de façon solide, c'est-à-dire au cours de la campagne de fabrication expérimentale de 1958-1959, il fut procédé à la mise en chantier de fabrications de plus en plus importantes en vue du ravitaillement de la collectivité militaire.

C. - Contrôle bactériologique et chimique.

Si le contrôle permanent d'une équipe de surveillance composée d'un vétérinaire militaire et d'un officier d'administration avait semblé jusqu'alors suffisant pour assurer la qualité biologique, c'est-à-dire hygiénique et nutritionnelle des fabrications de viandes désossées congelées réalisées par les abattoirs industriels titulaires des marchés de l'Intendance, il est apparu que la sévérité de ce dernier devait être solidement renforcée à compter du moment où ces mêmes fabrications comportaient une partie traitée sous forme de viande hachée.

Il fut donc décidé que l'acceptation de chaque "lot journée de fabrication" de cette nouvelle fourniture serait conditionnée par les résultats d'un double examen bactériologique et chimique, effectué sur un ou plusieurs prélèvements selon le cas, le produit contrôlé devant satisfaire aux normes suivantes :

"Normes bactériologiques des viandes hachées congelées fabrication Intendance" (1)

I. - GERMES PATHOGENES :

11 - Salmonellene : absence dans 10 g. du produit.

12 - Staphylocoques à coagulase positive : absence dans 0,01 g (1 centigramme) du produit (tolérer absence dans 0,001 g (1 milligramme) si toutes les autres normes sont respectées).

13 - Germes pathogènes autres que ceux définis en 11 et 12 ci-dessus et toxines microbiennes, absence dans 10 g du produit.

Nota. - La recherche de ces germes ou toxines n'est effectuée que sur demande expresse de celui qui a rédigé le bulletin de prélèvement et si le chef du laboratoire la juge nécessaire.

2. - GERMES DE CONTAMINATIONS ENTERIQUES :

21 - Escherichia coli (sensu stricto) : absence dans 0,01 g (1 centigramme) du produit.

22 - Welchia (Clostridium) perfringens : moins de 6 germes dans 1 gramme du produit.

3. - FLORE TOTALE :

31 - Flore aérobie mésophile : moins de 500 000 (cinq cent mille) germes dans 1 g. de produit.

Nota. - Dans le cas où l'échantillon à contrôler a été soumis à des conditions de conservation défavorables (décongélation pendant le transport...), il conviendra d'en tenir compte dans les conclusions du compte-rendu d'analyse.

"Normes chimiques des viandes hachées congelées fabrication Intendance"
Teneur en matière grasse : comprise entre 16 et 25 p. 100

(1) les techniques à mettre en oeuvre pour le controle de ces normes ont été diffusées aux laboratoires chargés d'effectuer les analyses.

D. - Utilisation des viandes hachées congelées :

Si le stockage des "rosbifs hachés congelés" ne pose pratiquement aucun problème du point de vue bactériologique, leur utilisation par la collectivité militaire doit être surveillée en raison de la fragilité de ce produit après rupture de la chaine du froid, c'est-à-dire pendant la période qui s'écoule de l'achat par l'utilisateur jusqu'à la cuisson.

Pour réduire ces risques, des instructions concernant le transport, la distribution et la mise en consommation des rosbifs hachés a été diffusée aux différents échelons intéressés.

En ce qui concerne l'utilisation, l'attention a été particulièrement attirée sur le fait qu'en atmosphère ambiante et dès que la température à coeur de ces viandes s'élève au-dessus de +2°C, leur stabilité devient aléatoire, c'est pourquoi, en pays de climat chaud, l'utilisation des rosbifs hachés n'a été envisagés que pour les consommateurs disposant d'appareils frigorifiques à moins que la préparation culinaire puisse suivre de très près (quelques heures) la sortie des chambres froides.

Dans le cas d'entreposage en armoires frigorifiques (0+4°C), les rosbifs doivent y être placés dès leur livraison et jusqu'au moment de leur utilisation qui doit obligatoirement intervenir au plus tard après 48 heures de stockage temporaire, des expériences de laboratoire ayant montré la parfaite stabilité du produit conservé à cette température pendant la durée indiquée.

Des expériences complémentaires ont également montré que ce délai de conservation sous régime de "petit froid" pouvait être dépassé, même en zone tropicale, si la viande utilisée pour la fabrication de ce produit a été préalablement traitée par la chlortétracycline, ce procédé ne pouvant évidemment être mis en oeuvre que dans les pays où la législation le permet.

CONCLUSION

Pour conclure, on peut dire que cette fabrication nouvelle mise au point par les services techniques de l'Armée et bien particulière quant à son mode de fabrication et d'utilisation, est une réussite en la matière, puisque sur le plan psychologique, les consommateurs en sont très satisfaits, que les services responsables sont heureux des conditions dans lesquelles ces viandes hachées peuvent se substituer aux viandes bouillies ou cuites en sauce et longuement cuisinées, et qu'aucun accident n'a jamais été enregistré à la suite de sa mise en distribution.

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FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

SUMMARY

Agenda Item: D.4

France

"ROAST BEEF TYPE" FROZEN MINCED MEAT, PREPARED FOR THE FRENCH ARMY SERVICE CORPS

By The Laboratory Service,
Technical Inspectorate of
Military Rations

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NOTES

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"ROAST BEEF TYPE" FROZEN MINCED MEAT PREPARED FOR THE FRENCH ARMY SERVICE CORPS

By
THE LABORATORY SERVICE
TECHNICAL INSPECTORATE OF MILITARY RATIONS

Boned beef, frozen into containers, produced for the Army Service Corps may be divided into two main categories according to its culinary use: on the one hand, first category meat for "grilling and roasting", and on the other, second category meat for "boiling and braising", which comes almost entirely from the hind quarters and the fore quarters respectively.

The utilization of meat from the hind quarters generally presents no problem, since meat of that type is more appreciated and in greater demand. The use of the sections of the shoulders, however, is often more difficult. In fact, second category meat has a great waste content (fat, fascia, etc.), requires longer cooking and can be eaten only in the form of increasingly unpopular dishes.

In order to utilize both categories of "frozen boned beef in containers", for general army purposes, and, to offset the inevitable criticisms from those receiving second category meat rations the French Army Service Corps has undertaken the processing of second category meat (considered the least satisfactory when served in its usual form). *This meat is boned, cut, minced, seasoned, vacuum-kneaded and forced, by mechanical means into cylindrical-shaped, air-tight, plastic containers, in such a way as to form "reconstituted roast beef", weighing about two kg., and immediately quick-frozen.

Since these products are manufactured industrially under very strict health regulations, tested for bacteria at the time of preparation, and packed and transported in cold storage, there is no danger of food poisoning if they are cooked immediately after being taken out of cold storage. They are appreciated more by consumers than the original meat would have been.

If the meat is to be used in tropical areas and if the law allows, a supplementary guarantee of preservation can be obtained by treating with chlortetracycline the meat intended for this purpose.

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* to render it suitable for grilling or roasting.

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